

Application No. 09/835,106
Docket No. 02-12, ACT 126/127

Art Unit 2839
Examiner Michael C. Zarroli

Amendments to the Claims:

The following claims are presented in the format of revised 37 CFR 1.121, as set forth in OG Notice of 25 February 2003.

1. (Re-presented - formerly dependent claim # 7): An optical switch, comprising:

A first waveguide holding member and a second waveguide holding member disposed over a substrate, wherein said first waveguide holding member moves relative to said second waveguide holding member; and

at least one movement guiding member which guides the motion of said first waveguide holding member relative to said substrate so that said first waveguide holding member moves transversely relative to said second waveguide holding member, wherein each of said at least one movement guiding members comprises a positioning member disposed between a pit and a groove.

2. (Original): An optical switch as recited in claim 1, wherein said second waveguide holding member is stationary relative to said substrate.

3. (Original): An optical switch as recited in claim 1, wherein said second waveguide holding member moves relative to said substrate.

4. (Cancelled)

5. (Original): An optical switch as recited in claim 1, wherein said second waveguide holding member moves longitudinally relative to said first waveguide holding member.

6. (Previously Amended): An optical device as recited in claim 1, wherein said transverse movement of said first waveguide holding member selectively couples at least one waveguide of said first waveguide holding member to at least one waveguide of said second waveguide holding member.

Application No. 09/835,106
Docket No. 02-12, ACT 126/127

Art Unit 2839
Examiner Michael C. Zarroli

7. (Cancelled)

8. (Re-presented - formerly dependent claim # 8): An optical switch ~~as recited in claim 1~~,
comprising:

a first waveguide holding member and a second waveguide holding member disposed over a substrate, wherein said first waveguide holding member moves relative to said second waveguide holding member; and

at least one movement guiding member which guides the motion of said first waveguide holding member relative to said substrate so that said first waveguide holding member moves transversely relative to said second waveguide holding member, wherein each of said at least one movement guiding members further comprises a positioning member disposed between a first groove and a second groove.

9. (Currently Amended): An optical switch as recited in claim 17, wherein said pit is disposed in said first waveguide holding member, and said groove is disposed in said substrate.

10. (Previously Amended): An optical switch as recited in claim 17, wherein said pit is disposed in said substrate and said groove is disposed in said first waveguide holding member.

11. (Original): An optical switch as recited in claim 1, wherein said second waveguide holding member moves transversely relative to said first waveguide holding member and at least one other movement guiding member guides said movement of said second waveguide holding member.

12. (Original): An optical switch as recited in claim 11, wherein each of said at least one other movement guiding members further comprises a positioning member disposed between a pit and a groove.

Application No. 09/835,106
Docket No. 02-12, ACT 126/127

Art Unit 2839
Examiner Michael C. Zarroli

13. (Original): An optical switch as recited in claim 11, wherein each of said at least one other movement guiding members further comprises a positioning member disposed between a first groove and a second groove.

14. (Previously Amended): An optical switch as recited in claim 12, wherein said pit is disposed in said second waveguide holding member, and said groove is disposed in said substrate.

15. (Previously Amended): An optical switch as recited in claim 12, wherein said groove is disposed in said second waveguide holding member, and said pit is disposed in said substrate.

16. (Original): An optical device as recited in claim 1, wherein said second waveguide holding members each include an $m \times n$ array of waveguides, wherein $m \geq 1$ and $n \geq 0$.

17. (Original): An optical device as recited in claim 16, wherein said waveguides are chosen from the group consisting essentially of optical fibers and planar waveguides.

18. (Original): An optical switch, comprising: A substrate having a first waveguide holding member and a second waveguide holding member disposed thereon, each of said first and second waveguide holding members having at least three pits therein and each of said pits having a positioning member therein; and at least two transverse grooves and at least two longitudinal grooves disposed in said substrate.

19. (Original): An optical switch as recited in claim 18, wherein said positioning members of said second waveguide holding member selectively engage said at least two transverse grooves.

20. (Original): An optical switch as recited in claim 18, wherein said positioning members of said first waveguide holding member selectively engage said at least two longitudinal grooves.

Application No. 09/835,106
Docket No. 02-12, ACT 126/127

Art Unit 2839
Examiner Michael C. Zarroli

21. (Original): An optical switch as recited in claim 20, wherein said first waveguide holding member moves longitudinally to set a gap spacing between said first and said second waveguide holding members.

22. (Original): An optical switch as recited in claim 19, wherein said second waveguide holding member moves transversely along said at least two transverse grooves and said transverse movement selectively couples at least one waveguide of said first waveguide holding member to at least one waveguide of said second waveguide holding member.

23. (Original): An optical switch as recited in claim 19, wherein said second waveguide holding member moves transversely along said at least two transverse grooves and said transverse movement selectively decouples at least one waveguide of said first waveguide holding member from at least one waveguide of said second waveguide holding member.

24. (Original): An optical switch, comprising: A first waveguide holding member having at least two longitudinal grooves; a second waveguide holding member having at least two transverse grooves; and a substrate having at least three pits each having positioning members therein which engage said longitudinal grooves and at least three pits having positioning members therein which engage said transverse grooves.

25. (Original): An optical switch as recited in claim 24, wherein said first waveguide holding member moves longitudinally to set a gap spacing between said first and said second waveguide holding members.

26. (Original): An optical switch as recited in claim 24, wherein said second waveguide holding member moves transversely along said at least two transverse grooves and said transverse movement selectively couples at least one waveguide of said first waveguide holding member to at least one waveguide of said second waveguide holding member.

Application No. 09/835,106
Docket No. 02-12, ACT 126/127

Art Unit 2839
Examiner Michael C. Zarroli

27. (Previously Amended): An optical switch as recited in claim 24, wherein said second waveguide holding member moves transversely along said at least two transverse grooves and said transverse movement selectively decouples at least one waveguide of said first waveguide holding member from at least one waveguide of said second waveguide holding member.

28. (Original): An optical switch, comprising: A substrate having at least one longitudinal groove and at least one transverse groove; a first waveguide holding member having at least one transverse groove; and a second waveguide holding member having at least one longitudinal groove.

29. (Original): An optical switch as recited in claim 28, wherein positioning members are disposed between each of said at least one longitudinal grooves in said substrate and each of said at least one longitudinal groove in said second waveguide holding member.

30. (Previously Amended): An optical switch as recited in claim 28, wherein positioning members are disposed between each of said at least one transverse grooves in said substrate and each of said at least one transverse groove in said first waveguide holding member.

31. (Original): An optical switch as recited in claim 28, wherein said substrate further includes at least one pit.

32. (Original): An optical switch as recited in claim 28, wherein said second waveguide holding member further includes at least one pit.

33. (Original): An optical switch as recited in claim 28, wherein said first waveguide holding member further includes at least one pit.

Application No. 09/835,106
Docket No. 02-12, ACT 126/127

Art Unit 2839
Examiner Michael C. Zarroli

34. (Previously Amended): An optical switch, comprising:

At least two waveguide holding members disposed on a substrate;
at least two holding member depressions disposed in each of said at least two waveguide holding members; and
at least two substrate depressions disposed in said substrate,
wherein at least three of said substrate and holding member depressions are grooves, and
wherein at least one of said substrate and holding member depressions is configured to permit transverse movement of said waveguide holding members relative to one another to effect optical switching.

35. (New) An optical switch, comprising:

a first waveguide holding member and a second waveguide holding member disposed over a substrate, said first waveguide holding member being movable relative to said substrate; and

at least one movement guiding member disposed between said substrate and said first waveguide holding member to guide the motion of said first waveguide holding member relative to said second waveguide holding member, said movement guiding member comprising at least one depression and at least one positioning member disposed in said depression.

36. (New) An optical switch as recited in claim 35, wherein said movement guiding member is configured to permit said first waveguide holding member to move transversely relative to said second waveguide holding member to selectively couple a waveguide of said first waveguide holding member to a waveguide of said second waveguide holding member.

37. (New) An optical switch as recited in claim 35, wherein said movement guiding member is configured to permit said first waveguide holding member to move longitudinally relative to said second waveguide holding member.

Application No. 09/835,106
Docket No. 02-12, ACT 126/127

Art Unit 2839
Examiner Michael C. Zarroli

38. (New) An optical switch as recited in claim 35, wherein said at least one depression is disposed in said substrate.

39.(New) An optical switch as recited in claim 35, wherein said at least one depression is disposed in said first waveguide holding member.

40. (New) An optical switch as recited in claim 35, wherein said at least one depression comprises a first groove disposed in said substrate and a second groove disposed in said first waveguide holding member, and wherein said positioning member is engaged with said first and second grooves.

41. (New) An optical switch as recited in claim 35, wherein said positioning member comprises at least one of a sphere and a rod.

42. (New) An optical switch as recited in claim 35, wherein said substrate comprises a monocrystalline material, and wherein at least one of said first and second waveguide holding members comprises a monocrystalline material.

43. (New) An optical switch as recited in claim 35, comprising at least one movement guiding member disposed between said substrate and said second waveguide holding member to guide the motion of said second waveguide holding member relative to said first waveguide holding member, said movement guiding member comprising at least one depression and at least one positioning member disposed therein.